# Proposed Revisions to 314 CMR 4.00: Massachusetts Surface Water Quality Standards Regulation

# New Table 29: Generally Applicable Criteria

## MassDEP Proposes to Adopt EPA's Clean Water Act Section 304(a) Recommended Criteria into 314 CMR 4.00 as a New Table 29

### Background and Reason for Change

The purpose of the 314 CMR 4.00: Massachusetts Surface Water Quality Standards (SWQS) regulation is to restore, enhance, and protect the chemical, physical, and biological integrity of surface waters in Massachusetts. The SWQS were adopted to designate the most sensitive uses for which surface waters are to be regulated, prescribe the minimum water quality criteria required to sustain those uses, restore waters to those uses, and maintain high quality waters.

The Federal Water Pollution Control Act, 33 USC §1251, et seq. (known as the Clean Water Act or CWA) and associated federal Water Quality Standards, 40 CFR Part 131, require the U.S. Environmental Protection Agency (EPA) to periodically publish updated or new recommended ambient water quality criteria (AWQC). The CWA and these federal regulations also require states to periodically review and, as appropriate, to update the AWQC they have adopted in State regulations. Each State has the option of either adopting the federally recommended criteria or developing its own criteria, subject to EPA review and approval. EPA may also promulgate criteria for a State that develops criteria that are not protective or that neither adopts EPA's recommended criteria nor develops its own.

The current version of the SWQS cross-references and adopts EPA's National Recommended Water Quality Criteria: 2002 (EPA-822-R-02-047, November 2002; see 314 CMR 4.05(5)(e)) to establish certain AWQC. EPA's preference, however, is for States to include the criteria in their regulations, directly. In addition, MassDEP has not adopted any EPA-recommended AWQC issued since 2002. However, the CWA and associated regulations require States either to adopt AWQC for all parameters for which EPA has published recommended criteria or to explain why they have not done so.

### EPA Guidance

Since EPA's 2002 guidance, EPA has updated its recommended aquatic life criteria for five pollutants and added criteria for four additional pollutants. In addition, for human health, EPA has updated criteria for 100 pollutants and added criteria for eleven new pollutants. Included in the human health criteria are four new pollutants with organoleptic effect (taste and odor) criteria.

### Proposed Revisions

MassDEP's new proposed Table 29, Generally Applicable Criteria, lists all Massachusetts water quality pollutant criteria. Table 29 is split into two sections: Table 29a for Aquatic Life Criteria and Table 29b for Human Health Criteria. The table includes all EPA-recommended criteria through 2018, with the exception of EPA's 2016 update for selenium. The selenium update is unusually complex and MassDEP plans further review before potential adoption. Most criteria in Table 29 are presented as fixed values. The aquatic

**Cow Pond Brook, Groton MA. Photo Courtesy of James Meek, MassDEP**

**Spotlight**

CWA and associated regulations require States either to adopt AWQC for all parameters for which EPA has published recommended criteria or to explain why they have not done so.

The proposed new Table 29 has two sections: Table 29a for Aquatic Life Criteria and Table 29b for Human Health Criteria. The table lists all the EPA criteria with the exception of the 2016 update for selenium.

Questions or comments? Email the Director of MassDEP's Watershed Planning Program at laura.blake@mass.gov.

# New Table 29: Generally Applicable Criteria (cont.)

life criteria, however, include model and equation-based criteria for 7 metals (hardness-dependent equations and more complex models); ammonia (a temperature- and pH-dependent equation); and pentachloro-phenol (a pH-dependent equation).

**Water Effect Ratio (WER)**: In cases where further adjustments to local conditions are desired, Table 29 would allow EPA's recommended Water Effect Ratio (WER) method to be used to adjust aquatic life criteria for specified metals under a MassDEP-approved Quality Assurance Project Plan (QAPP). The WER procedure allows for toxicity testing and analysis to adjust the criteria.

**Overview of Key Criteria Updates:**

**Copper Criteria.** Currently, freshwater copper criteria for aquatic life in the SWQS reflect EPA's 1996 guidance based on hardness-dependent equations. Proposed Table 29 would retain the hardness-dependent equations and adopt EPA's 2007 copper Biotic Ligand Model (BLM). When both are able to be calculated for a relevant location, Table 29 provides that the BLM criteria would apply. The MassDEP-approved version of the BLM (version 2.2.3) will be posted on MassDEP's web page. Table 29 allows for certain future updates to the BLM, subject to MassDEP approval. More detail on this update may be obtained through MassDEP's separate fact sheet on the proposed copper criteria.

**Aluminum Criteria.** Currently, freshwater aluminum criteria for aquatic life in the SWQS reflect EPA's 1988 guidance featuring fixed acute (750 µg/L) and chronic (87 µg/L) values. In 2018, EPA updated its recommended aluminum criteria. EPA's new guidance uses multiple linear regression (MLR) models that incorporate local pH, hardness, and dissolved organic carbon (DOC) data to derive aluminum criteria. EPA also released an Aluminum Criteria Calculator, v.2.0 (the Calculator), with the new guidance. Proposed Table 29 includes a choice of two alternatives for development of criteria using the MLR models: 1) using default aluminum criteria by watershed (provided in an appendix of Table 29), or 2) collecting concurrent pH, hardness, and DOC ambient data to be used as input values for the Calculator. If the proposed revisions are approved by EPA, and data are available to calculate MLR criteria for a given location, the MLR criteria would supersede defaults. The Calculator can be accessed through MassDEP's web page. More details on this update may be obtained through MassDEP's separate fact sheet on the proposed aluminum criteria.

**Coordination with Other Groups**

Outreach and consultation with MassDEP's Office of Research and Standards (ORS), and the National Pollutant Discharge Elimination System (NPDES) and Surface Water Discharge (SWD) programs were conducted during the review process. MassDEP also coordinated with stakeholders including MassWildlife, MA Department of Agriculture (DAR), EPA Headquarters and Region 1, non-governmental organizations, and regulated entities, including municipalities, during the criteria review process.

**Regulatory Implications**

The proposed changes to the regulation reflect the latest science-based criteria. The implications of the changes will vary by pollutant; certain criteria are lower (more stringent) and some are higher (less stringent) than the 2002 criteria. In addition, certain model– or equation-based criteria such as aluminum and ammonia vary according to surface water characteristics. The inclusion of the additional human health criteria could impact permit limits; however, EPA and MassDEP already require NPDES/SWD permittees to monitor for these parameters as part of the permit application process. MassDEP anticipates that adoption of these criteria will not significantly change the requirements for NPDES/SWD -permitted facilities. Including criteria directly in the regulation rather than by cross-referencing them will increase clarity and transparency, which will help with implementation of the criteria.

For more information: see EPA's 1994 WER Guidance at https://www3.epa.gov/npdes/pubs/owm624.pdf, EPA's copper BLM at https://www.epa.gov/wqs-tech/copper-biotic-ligand-model and EPA's aluminum MLR at https://www.epa.gov/wqc/aquatic-life-criteria-aluminum.

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